CLAIM AMENDMENTS

1. (currently amended) A device for need-controlled modulation of physiological and/or pathological neuronal rhythmic activity, the device comprising

a control unit [[(4)]],

at least one means for detecting brain activity and connected to the control unit, and

a stimulator, ~~(1) and at least one means for detecting brain activity (2) which is connected with the control unit (4)~~ for generating a periodic succession of pulses to control the phase dynamic of the neuronal rhythmic activity and a desynchronization pulse following the periodic succession of pulses to desyncrhonize the neuronal rhythmic activity, the periodic succession of pulses and the desynchronization pulse being visual or acoustic or tactile.

2. (currently amended) The device according to claim 1, ~~characterized in that~~ wherein the stimulator [[(1)]] is at least one component from the group comprising a display screen, a pair of shutter-equipped eyeglasses, a loud speaker, headphones, a pressure generator and a time-modulated laser.

3. (currently amended) The device according to claim 1 ~~, characterized in that~~ wherein the means for detecting brain

activity is at least one component from the group comprised of a scalp EEG electrode or a MEG electrode.

4. (currently amended) The device according to claim 1, ~~characterized in that~~ wherein the means for detecting brain activity is connected with the control unit [[(4) by]] via an isolating amplifier [[(3)]].

5. (currently amended) The device according to claim 1, further comprising ~~characterized in that it comprises a~~ means connected to the control unit for feeding back [[of]] a patient reaction ~~(5) which is connected to the control unit (4)~~.

6. (currently amended) The device according to claim 1, further comprising ~~characterized in that it comprises~~ means for evoking ~~a maximum~~ physiological and/or pathological brain activity.

7. (currently amended) The device according to claim 6, further comprising ~~characterized in that it comprises~~ means for carrying out a frequency scan.

8. (currently amended) The device according to claim 1, further comprising ~~characterized in that it comprises~~ means for quantifying the neuronal activity.

9. (currently amended) The device according to claim 8 ~~, characterized in that~~ wherein the means for quantifying the neuronal activity is a means for quantifying the amplitude of the power spectrum over the excitation frequency range or a means for quantifying the instantaneous amplitude of the frequency range as determined by the Hilbert transformation.

10. (currently amended) The device according to claim 1 ~~, characterized in that~~ wherein the control unit [[(4)]] is ~~joined~~ connected with [[a]] means for actuating the stimulator [[(1)]].

11. (currently amended) The device according to claim 1, further comprising ~~characterized in that it includes~~ means for investigating the signals measured by the sensor [[(2)]].

12. (currently amended) The device according to claim 11 wherein the means for investigating the signals measured by the sensor [[(2)]] carries out a Fourier transformation or a wavelet analysis.

13. (currently amended) The device according to claim 11, further comprising ~~characterized in that it comprises~~ means for registering the change in the amplitude of the rhythm to be excited.

14. (currently amended))]] The device according to claim 1, further comprising ~~characterized in that it comprises~~ means for carrying out an entrainment.

15. (currently amended) The device according to claim 1, further comprising ~~characterized in that it comprises~~ means for desynchronization.

16. (currently amended) The device according to claim 14, ~~characterized in that it comprises~~ further comprising means for testing the quality of the entrainment.

17. (currently amended) The device according to claim 16 ~~, characterized in that~~ wherein the means for testing the quality of the entrainment comprises [[a]] means for determining the phase or the phase and the amplitude of the neuronal rhythm to be desynchronized.

18. (currently amended) The device according to claim 17 ~~, characterized in that~~ wherein the means for determining the phase and amplitude of the neuronal rhythm to be desynchronized carries out a Hilbert transformation or a matching of the signals of the neuronal rhythm with a slowly changing sine function in a sliding time window.

19. (currently amended) The device according to claim 1, further comprising ~~characterized in that it comprises~~ means for evaluating the phase and amplitude of the neuronal activity.

20. (currently amended) The device according to claim 19 ~~, characterized in that~~ wherein the means for evaluating the phase and amplitude of the neuronal rhythm contains [[a]] means for calculating phase resetting curves.

21. (currently amended) The device according to claim 20, further comprising ~~characterized in that it comprises~~ means for visualization [[(6)]] of the phase resetting curves.

22. (currently amended) The device according to claim 20, further comprising ~~characterized in that it comprises~~ means for the quantitative characterization of the phase resetting curves.

23. (currently amended) The device according to claim 19, wherein ~~, characterized in that~~ the means for determining the amplitude is a means by which the amplitude resetting curves are effected.

24. (currently amended) The device according to claim 1, further comprising ~~characterized in that it comprises~~ means for determining the vulnerable phase of the neuronal rhythm.

25. (currently amended) The device according to claim 24 ~~, characterized in that~~ wherein the means for determining the vulnerable phase is a means for varying the time spacing between the last excitation of the entrainment and the desynchronizing excitation signal.

26. (currently amended) The device according to claim 25 ~~, characterized in that~~ wherein the means for varying the time spacing between the last excitation of the entrainment and the desynchronizing is a means which effects a variation in the time spacing for different values of the intensity.

27. (currently amended) The device according to claim 25 ~~, characterized in that~~ wherein the means for varying the intensity is a means for increasing the intensity in equidistant steps.

28. The device according to claim 24, further comprising ~~characterized in that it includes a~~

means which enables from a series of test stimulations optimal stimulation parameters to be determined.

29. (currently amended) The device according to claim 28, further comprising ~~characterized in that it includes~~

means which detects stimulation parameters from a series of test stimulations from which a minimization of the amplitude of the neuronal activity to be desynchronized can be obtained.

30. (currently amended) The device according to claim 29 ~~, characterized in that~~ wherein the means for determining the minimization of the amplitude of the stimulation parameters which give rise to a desynchronization of the rhythm comprises a means for carrying out the Hilbert transformation.

31. (currently amended) The device according to claim 29 ~~, characterized in that~~ wherein the means for determining the minimization of the amplitude of the stimulation parameters giving rise to a desynchronization of the rhythm comprises a means for matching a slowly changing sine function to a signal of the sensor [[(2)]] in a time window following stimulation.

32. (currently amended) The device according to claim 29 ~~, characterized in that~~ wherein the means for determining the stimulation parameters giving rise to a minimization of the amplitude of the desynchronizing rhythm comprises a means for integrating the amplitude of the power spectrum over the frequency band of signals measured by the sensor [[(2)]] in a time window following the stimulation.

33. (currently amended) The device according to claim 20, further comprising ~~characterized in that it comprises~~ means for increasing the intensity in non-equidistant steps.

34. (currently amended) The device according to claim 20, further comprising ~~characterized in that it comprises a~~ means for evaluating phase resetting curves with which the effect of the desynchronizing excitation pulse on the phase dynamics of the desynchronizing neuronal activity is investigated.

35. (currently amended) The device according to claim 34 ~~, characterized in that~~ wherein the means for evaluating the phase resetting curves comprises a means for applying ϕ_a, the phase of the neuronal activity before stimulation, over ϕ_b, the phase of the neuronal activity after stimulation.

36. (currently amended) The device according to claim 34 ~~, characterized in that~~ wherein the means for evaluating the phase resetting curves comprises a means for determining the position of the phase resetting curve at which the transition from a main rise 1 to a main rise 0.

37. (currently amended) The device according to claim 1, further comprising ~~characterized in that it includes a~~ means for monitoring the stimulation [[(6)]].

38. (new) The device according to claim 1 wherein the desynchronization pulse follows the periodic succession of pulses with a predetermined time delay.